भारतीय मानक **IS 12339 : 2023**

Indian Standard

वस्त्रादि — जूट के करघों के लिए क्रैंक शाफ्ट — विशिष्टि

(पहला पुनरीक्षण)

Textiles — Crank Shaft for Jute Looms — Specification

(First Revision)

ICS 59.120.30

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Textile Machinery and Accessories Sectional Committee, TXD 14

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

Crank shaft of jute looms in textile machinery is a critical component which transmits the power from motor to machinery at a required speed and controls the complete operation. Performance of Crank shaft directly impacts the service life of the jute loom.

This standard has been formulated with a view to providing guidance to manufacturers and users of crank shaft for jute looms. This standard would ensure manufacture of crank shafts of acceptable quality leading to improved functioning of the jute looms.

This standard was originally published in 1988. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

a) Title of the standard has been modified as per revised standard;
b) Marking and packing clauses have been modified;
c) Sampling clause has been incorporated; and
d) References to Indian standards have been updated.

The composition of the committee responsible for the formulation of this standard is listed in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — CRANK SHAFT FOR JUTE LOOMS — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements of crank shaft used in jute looms.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in Annex A.

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Left-Hand Loom — A loom with the starting handle on its left hand side,

3.2 Right-Hand Loom — A loom with the starting handle on its right hand side.

NOTE — If an observer stands near the delivery end of the loom and looks against the run of the warp, the side on his left-hand is left-hand side of the loom and the side on his right hand is the right-hand side of the loom.

3.3 Reed Space (of the Loom) — Maximum space available on loom for the insertion of a reed, that is, the overall width of the reed which can be fixed on the loom.

3.4 Crank Radius — The perpendicular distance between the axis of the crank shaft journal and the axis of its crank pin.

4 MANUFACTURE

4.1 Material

Crank shaft shall be manufactured from carbon steel bars conforming to Class 2A of IS 1875.

4.2 Workmanship and Finish

The shaft shall be straight and free from rust. Crank pin and journals of the crank shaft shall be smooth finished and polished. The roughness value (R_a) of crank pins and the journals shall be within 1.6 µm to 6.3 µm.

4.3 Co-axiality and Parallelism

While manufacturing the crank shaft, the co-axiality of journals and crank pins and parallelism between the axis of the journals and the crank pins should be maintained.

5 REQUIREMENTS

5.1 Dimensions

5.1.1 *Nominal*

The nominal dimensions of the crank shaft shall be as agreed to between the buyer and the manufacturer. In the absence of any agreement, these shall be as declared by the manufacturer.

5.1.2 *Tolerance*

The nominal dimensions (*see* Fig. 1) shall be subject to the following tolerances in millimetres.

A	± 0.4	Key way depth ± 0.13
B	± 0.13	
C	± 0.4	
Dia D_1	- 0.025	
	- 0.050	
Dia D_2	- 0.025	Key way width + 0.026
	- 0.050	
	+ 0.013	
E	± 0.4	
F	± 0.25	
G	± 0.25	
H	+ 0.13	
	- 0.00	

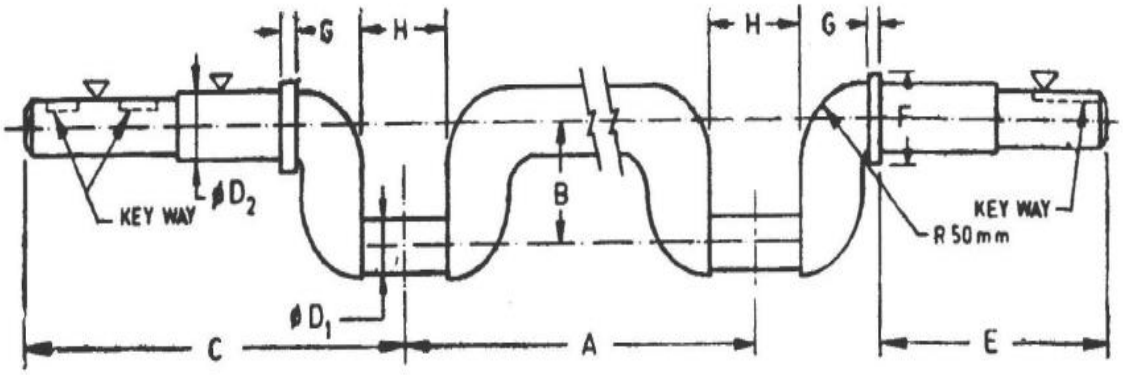

FIG. 1 CRANK SHAFT FOR JUTE LOOMS

5.2 True Running

The journals and crank pins of the crank shaft shall run true. However, when tested by the method given in **B-1**, out-of-true running of journals and the crank pins, if present, shall not exceed 0.025 mm and 0.013 mm, respectively.

5.3 Parallelism

Each of the crank pins shall be parallel to both the journals. However, when tested by the method given in **B-2,** a deviation of 0.05 mm from parallelism shall be permitted.

5.4 Crank Radius

The variation in crank radius of the crank shaft when tested by the method given in **B-3**, shall not exceed 0.2 mm.

5.5 Dynamic Balancing

The central portion of the crank shaft shall have machined surface for achieving dynamic balancing.

6 MARKING

6.1 Each crank shaft shall be marked, at a suitable place, with the following:

a) 'R' or 'L' depending upon the right-hand or left-hand loom on which it is to be used;

b) Reed space of the loom on which it is to be used;

c) Manufacturer’s name, initials or trade-mark, if any;

d) Name of the item;

e) Number of crank shafts packed;

f) Gross and net mass;

g) Lot/batch number;

h) Country of origin; and

j) Any other information required by the law in force and/or by the buyer.

6.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

7 PACKING

The crank shaft shall be coated lightly with rust preventive grease and shall be held in semicircular slots cut out in four parallel wooden planks fixed in vertical position inside a wooden case. The slots should be suitably protected so that wood does not come in direct contact with the shaft. The wooden case shall be strong enough to withstand the hazards of transit.

8 SAMPLING

Unless otherwise agreed to between the buyer and the seller, to ascertain the conformity of crank shaft to the requirements of this specification, or as specified in IS 2500 (Part 1) shall be followed.

ANNEX A
(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
IS 1875: 1992	Carbon steel billets, blooms, slabs and bars for forgings — Specification (*fifth revision*)
IS 2500 (Part 1) : 2000	Sampling procedures for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection (*third revision*)

ANNEX B
(*Clauses* 5.2, 5.3 and 5.4)

METHODS OF TEST

B-1 TRUE RUNNING OF JOURNALS AND CRANK PINS

B-1.1 A surface plate, two V-blocks and a micrometer dial gauge shall be used for the purpose of this test.

B-1.2 True Running of Journals

Set the V-blocks on the surface plate. Take a crank shaft and mount it with its journals in the V blocks. Set the micrometer dial gauge in such a way that its anvil head is held in contact with the surface of one of the journals of the crank shaft. Adjust the pointer of the dial gauge to zero position. Rotate the shaft once. Observe the maximum deflection of the needle of the micrometer dial gauge on both sides of the zero position. Add the two values and divide the sum by two. Repeat the test at 4 more places along the length of the same journal and at 5 places along the length of the second journal.

B-1.3 True Running of Crank Pins

Set the V-blocks on the surface plate. Take a crank shaft and mount it with its pins in the V- blocks. Set the micrometer dial gauge in such a way that its anvil head is held in contact with the surface of one of the crank pins (*see* Note). Adjust the pointer of the dial gauge to zero position. Rotate the shaft once. Observe the maximum deflection of the pointer of the micrometer dial gauge on both sides of the zero position. Add the two values and divide the sum by two. Repeat the test at one more place along the length of the same pin and at two places on the second crank pin.

NOTE — The point of contact should be selected at about 10 mm from either end of the crank pin.

B-1.4 Report the crank shaft to be in conformity with the requirements of **5.2** if none of the values as obtained in **B-1.2** and **B-1.3** exceed 0.025 mm and 0.013 mm, respectively.

B-2 PARALLELISM OF CRANK SHAFT JOURNALS AND CRANK PINS

B-2.1 A surface plate, two V-blocks and a dial indicator shall be used for the purpose of this test.

B-2.2 Set the V-block on the surface plate. Take a crank shaft and mount it with its journals in the V-blocks so that the crank pins are in their lowest position.

B-2.3 Mark two points A and B, 50 mm apart at the highest surface of one of the Journals of the crank shaft. Set the indicator at point A. and adjust its pointer at zero position. Move the indicator from A to B (*see* Note). Record the maximum indicator reading with its proper algebraic sign (that is, plus or minus). Mark two points C and D, 50 mm apart at the highest surface of the crank pin which is nearest to the journal tested as above. Set the indicator at point C and adjust its pointer at zero posit ion. Move the indicator from C to D. Record the maximum indicator reading with its proper algebraic sign (that is, plus or minus). Determine the algebraic difference between the two values measured on the journal and the crank pin.

NOTE — The indicator may be moved from A to B by moving its base along the edge of a parallel which has been set parallel to the sides of V-blocks.

B-2.4 Rotate the shaft through 90° (a quarter rotation) and keep it in this position by suitable means. Repeat the procedure prescribed in **B-2.3**.

B-2.5 Repeat the procedure prescribed in **B-2.3** and **B-2.4** on the second journal and the second crank pin.

B-2.6 Report the crank shaft to be in conformity with the requirements of **5.3** if none of the values observed in **B-2.3**, **B-2.4** and **B-2.5** exceeds 0.05 mm.

B-3 CRANK RADIUS

B-3.1 Surface plate, two V-blocks and a Vernier height gauge shall be used for the purpose of this test.

B-3.2 Set the V-blocks on the surface plate. Take a crank shaft and mount it with its journals in the V-blocks in such a way that the crank pins are in the lowest position. Measure the height of top of the crank pin in this position at a point A with the vernier height gauge.

B-3.3 Rotate the crank shaft through 180° so that the crank pins are in their highest position. Keep the crank pins in this position by suitable means (*see* Note 1). Measure with the vernier height gauge the height of the top of the crank pin in this position at a point B corresponding to the point A (*see* Note 2).

NOTES

1 The crank pins can be kept in this position by holding the crank shaft against an angle plate.

2 The point B corresponding to the point A may automatically be obtained by keeping the height gauge in the same position and raising the scriber to the required height.

B-3.4 Subtract the height obtained as in **B-3.2** from the height obtained as in **B-3.3**. Divide the value so obtained by two (This value shall be equal to the radius of the crank).

B-3.5 Repeat the test on the second crank pin.

B-3.6 Report the crank shaft to be in conformity with the requirements of **5.4**, if the difference in the values obtained in **B-3.4** and **B-3.5** is not more than 0.2 mm.

ANNEX C
(*Foreword*)

COMMITTEE COMPOSITION
Textile Machinery and Accessories Sectional Committee, TXD 14

Organization	*Representative(s)*
Central Manufacturing Technology Institute, Bengaluru	DR NAGAHANUMAIAN (***Chairperson***)
ATE Enterprises Private Limited, New Delhi	SHRI ABHIJIT KULKARNI SHRI ANIL KUMAR SHARMA (*Alternate*)
Amritlakshmi Machine Works, Mumbai	SHRI N. K. BRAHMACHARI SHRI N. K. RAUT (*Alternate*)
Bhowmick Calculator, Kolkata	SHRI GOUTAM BHOWMICK SHRI VIVEKANANDA BHOWMICK (*Alternate*)
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Member Secretary
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SCIENTIST 'B'/ASSISTANT DIRECTOR
(TEXTILES), BIS

Bureau of Indian Standards

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Review of Indian Standards

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Amend No.	Date of Issue	Text Affected

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